

**ABSTRACT OF THE DISCLOSURE**

In a method and magnetic resonance apparatus wherein a homogenous magnetization is generated in a spatial examination volume of the apparatus during examination of a subject, individual resonator segments of a body coil, that are electromagnetically decoupled from each other, are separately activated by a control and evaluation device according to sets of predetermined segment-specific excitation parameters stored in the control and evaluation device. The resonator segments are temporally sequentially excited in an excitation sequence, using different excitation parameter sets with phase distributions of the nuclear magnetization distributions in the examination volume constructively superimposing to form a resulting homogenous entire nuclear magnetization distribution in the examination volume.

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